

180032

JPRS 80869

20 May 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 352

19981203 122

FBIS

FOREIGN BROADCAST INFORMATION SERVICE

TYIC QUALITY EXPECTED 3

6
56
A04

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

20 May 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 352

CONTENTS

ASIA

AUSTRALIA

Conservation Groups Issue Plan To Save Karri Forest (THE WEST AUSTRALIAN, 16 Mar 82)	1
Health Council: Put Cancer Warning on Asbestos Products (Greg Turnbull; THE SYDNEY MORNING HERALD, 18 Mar 82)	2
Disagreement in Government Over Pulpwood Harvesting Policy (Andrew Bolt; THE AGE, 18 Mar 82)	3
Abattoir Fined for Discharging Waste Into Yarra River (Corrie Perkin; THE AGE, 27 Mar 82)	4
Opinion Polls at Odds Over NSW Rain Forest Logging (Paul Ellercamp; THE SYDNEY MORNING HERALD, 24 Mar 82) ...	5
Briefs	
Soil Conservation Legislation	6
Wildlife Preservation Appointee	6
Toxic Waste Siting Problem	6
Funding for Conservation	7
NSW Conservation Area Increase	7
WA Reforestation Plan	8
Logging Decision	8
Effluent, Chemicals in Bay	8
Reef Drilling Threat	8

BANGLADESH

'All-Time High' Salinity in Western Districts (THE NEW NATION, 22 Apr 82)	10
------------------------------------------------------------------------------------	----

INDIA

Industrial Pollution in Madhya Pradesh Criticized (Sreekant Khandekar; INDIA TODAY, 15 May 82)	11
Thermal Plant Causes Soot Problems in Punjab Town (Gurmeh Singh Sra; INDIA TODAY, 15 May 82)	13
Briefs Himalayan Forests Endangered	15

PHILIPPINES

Manila Bay Described as Health Hazard (BULLETIN TODAY, 19 Apr 82)	16
----------------------------------------------------------------------------	----

THAILAND

Overuse of Pesticides Kills Fish in South, Central Regions (DAO SIAM, 8 Mar 82)	17
DDT Poisoning Said To Kill Fish in Canals (BAN MUANG, 20 Feb 82)	19
Environmental Protection Fails To Halt Chao Phraya Pollution (SIAM RAT, 13 Mar 82)	21

EAST EUROPE

CZECHOSLOVAKIA

Czech Experts Discuss Protection of Environment (Milos Prosek; TVORBA, 17 Mar 82)	23
--------------------------------------------------------------------------------------------	----

SUB-SAHARAN AFRICA

ETHIOPIA

Briefs Illubabor Afforestation	38
-----------------------------------------	----

SOUTH AFRICA

Halting Desert Encroachment Proposed (THE CITIZEN, 4 May 82)	39
-----------------------------------------------------------------------	----

WEST EUROPE

FINLAND

Concern Increases Over Purity of Drinking Water
(UUSI SUOMI, 29 Mar 82) 40

Meteorologist Discusses Air Pollution Over Finland
(Goran Nordlund; HELSINGIN SANOMAT, 29 Mar 82) 42

GREECE

Briefs
Deadly Pollution Results 45

NORWAY

Environment Movement Strong Factor in Energy Plans
(Pal Nordenborg; ARBEIDERBLADET, 13 Feb 82) 46

SWEDEN

Committee Finds Improvement in Hazardous-Waste Handling
(DAGENS NYHETER, 10 Apr 82) 48

Briefs
Forestry Chemical Substances Banned 50
Lake Acidification Reported 50

CONSERVATION GROUPS ISSUE PLAN TO SAVE KARRI FOREST

Perth THE WEST AUSTRALIAN in English 16 Mar 82 p 35

[Text] **WA conservation groups yesterday released details of a plan to protect the South-West karri forests and to boost tourism in the region.**

The plan calls for an increase in the area of karri forest classified as national park from the present four per cent of the total karri in the Manjimup region to 34 per cent.

Conservation groups say that this could be achieved by:

- Extensions to the Beedelup and Warren national parks in the Pemberton-Northcliffe area.
- Establishment of a Shannon Basin karri national park.
- Extension of the Walpole-Nornalup national park to include the Valley of the Giants and a Deep River national park.

EMPLOYMENT

The increase in the national parks would create alternative employment in tourism for timber workers, the group say.

The proposal has been put to the Department of Conservation and the Environment and the State Government by the Conservation Council of WA, the South-West Forests Defence Foundation and the Campaign to Save Native Forests.

It is a joint response to the release last week of

a Forests Department five-year plan to reduce the hardwood sawlog cut in WA forests and to a call by the Environmental Protection Authority for public response to proposals for a multiple-use management plan for the whole karri forest.

DESTRUCTION

A conservation spokesman, Mr Nell Bartholomaeus, said that the Forests Department's plan to reduce timber cutting still permitted too much destruction of the karri forests.

The timber industry was cutting itself out of business and ruining the

karri forest for tourism, which was a great money-earner.

Mr Bartholomaeus said that the timber industry offered no hope for new jobs. Since 1965 employment in the industry had declined by 41 per cent while log production from State forests had increased by 36 per cent.

Diversification of the forest-based economy in the South-West was essential if the employment decline was to be arrested and reversed.

In their submission the conservation groups propose the promotion of tourism by cutting \$1.5 million from the Forests

Department budget and transferring \$1 million to the National Parks Authority and \$500,000 to the Department of Tourism.

SPENDING

Mr Bartholomaeus said: "We have calculated that during 1981 tourists spent at least \$4 million in the karri region. This compares favourably with the \$5.8 million derived from the timber work-force.

"Even at the present rate, the growth of karri tourism would double the value of the timber industry in the Manjimup region by 1988."

Mr Bartholomaeus said conservationists were proposing that the amount of karri that could be felled by the timber industry be reduced to a sustainable yield where felling did not exceed regeneration.

This would ensure future timber supplies.

The Minister for Forests, Mr Laurance, said he was interested in the proposals put forward by the conservationists and would study their document, "Karri at the Crossroads."

Timber and tourism had a valuable role to play that should be complementary and not competitive, he said.

CSO: 5000/7530

HEALTH COUNCIL: PUT CANCER WARNING ON ASBESTOS PRODUCTS

Sydney THE SYDNEY MORNING HERALD in English 18 Mar 82 p 3

[Article by Greg Turnbull]

[Text] CANBERRA. — A committee of the National Health and Medical Research Council has recommended that all products containing asbestos be labelled with a health warning specifying the risk of cancer.

The cancer warning was opposed by the asbestos industry, but a spokesman for the industry said yesterday the recommendation would be complied with, and labels containing the warning were being produced.

The committee's report on the health hazards of asbestos was completed nearly a year ago, but was tabled only this week in Federal Parliament by the Minister for Health, Mr MacKellar.

The tabling of the report is understood to have been delayed because of objections by the asbestos industry to the cancer warning recommendation.

The committee was made up of representatives of trade unions, the industry, and Federal and State Governments.

The contentious recommendation proposed a label which would contain the words: "breathing asbestos dust may cause serious damage to health, including cancer. Smoking greatly increases the risk."

Another recommendation calls for preference to be given to non-smokers in employment on work requiring exposure to asbestos, because of the "marked influence of smoking on the incidence of lung cancer in asbestos workers."

A spokesman for the South Pacific Asbestos Association, which represents the asbestos industry, said yesterday there was no dispute that there was a link between exposure to asbestos and some cancers, but the industry objected to being "singled out."

In the industry's view there were other much more potent carcinogens on the market, such as cigarettes, which did not have such an explicit warning.

The spokesman said, to his knowledge, asbestos had become the first product in Australia to be subjected to an explicit cancer warning, and Australia had become the first country in the world to impose such a warning on asbestos products.

CSO: 5000/7530

DISAGREEMENT IN GOVERNMENT OVER PULPWOOD HARVESTING POLICY

Melbourne THE AGE in English 18 Mar 82 p 21

[Article by Andrew Bolt]

[Text] The Minister for Forests, Mr Austin, and the Minister for Conservation, Mr Houghton, are in strong disagreement over how much pulpwood harvesting Government policy allows in the Otway Ranges.

The disagreement follows a decision last Friday by Mr Austin to grant a Colac-based group of sawmillers the option on a five-year licence to harvest each year 70,000 tonnes of pulpwood from the Otways.

Mr Austin and the chairman of the Forests Commission, Mr Alan Threader, believe the amount of pulpwood involved is in line with a Government decision in December to allow pulpwood harvesting in the area only "of the type conducted in recent years".

Mr Austin said normal sawlogging operations in the past had left about 70,000 tonnes of pulpwood on the forest floor. To harvest this amount would not represent an extension of sawmilling activity.

But Mr Houghton, told 'The Age' he believed the Government's decision limited pulpwood harvesting to 20,000 tonnes a year. He said there was no way the decision could be interpreted to allow 70,000 tonnes a year.

He said Smorgon Consolidated Industries had limited its pulpwood harvesting in the Otways to an average of about 20,000 tonnes a year over about 10 years, with a maximum in one year of 40,000 tonnes. Mr Houghton believed the lower figure represented harvesting "of the type conducted in recent years".

There was a case for arguing the figure should be 40,000 tonnes but the higher level set by Mr Austin and the Forests Commission was not Government policy, Mr Houghton said.

When the Government decided last December to limit pulpwood harvesting in the Otways, Mr Austin issued a Press release in which he said an environmental effects study would have to be carried out before any new type of operation was approved. He emphasised that the status quo would be maintained.

Option

But last Friday, Mr Austin announced he had granted the option of a licence to allow pulpwood harvesting in the Otways to Midway Wood Products Pty Ltd, a Colac-based group of nine sawmillers.

If the group, within 18 months, can convince the Forests Commission that it has a market for its woodchips it will be allowed to harvest up to 70,000 tonnes a year of pulpwood for five years. (Pulpwood is unsuitable for sawlocks.)

Mr Austin said yesterday that the Forests Commission had told him that 70,000 tonnes was the estimated amount of pulpwood left annually on the forest floor under the present sawlogging operations. This wood had been burnt or left to rot since Smorgon stopped harvesting pulpwood in the Otways several years ago.

He said there would be no extension of pulpwood harvesting because sawmillers would be limited to harvesting whatever was left over from normal sawlogging operations.

Labor's spokesman on conservation, Mr Evan Walker, con-

demned Mr Austin's decision to grant the option as "cynical, shabby politicking". "It is a prescription for economic disaster," he said. Mr Walker said the decision pre-empted an interdepartmental task force set up by the Government last December.

The task force is due to report in June on the effects of any extension in pulpwood harvesting in the Otways on water quality and quantity and on the forest itself, both as a natural resource and as a tourist attraction. It will also report on the economic benefits to Victoria of chipping operations in the area.

The president of the Geelong Environment Council, Mrs Joan Lindros, said Mr Austin's decision would lead to extra tree-felling. She said this had been confirmed by a Forests Commission officer.

She said woodchipping in the area would allow sawmillers to move in on areas which otherwise would have been unprofitable. "The remaining areas of mixed-age forest will disappear very rapidly," she said.

A spokesman for the Australian Conservation Foundation, Mr Ian Penna, said the decision would lead to more intensive forest management and a change of habitat for flora and fauna. "The Government is giving away the Otways to its commercial development friends before the elections," he said.

CSO: 5000/7530

ABATTOIR FINED FOR DISCHARGING WASTE INTO YARRA RIVER

Melbourne THE AGE in English 27 Mar 82 p 15

[Article by Corrie Perkin]

[Text]

A YARRA Junction abattoir yesterday was fined \$800 for having allowed production waste, including animal blood and urine to run off the property and into a water passage which joins the Yarra River.

Compton Holdings Pty Ltd, of Summerhill Road, Yarra Junction, was fined \$600 in default distress for having breached two conditions of its water licence and was ordered to pay \$200 costs in the Warburton magistrates court.

Mr Doug Bolster, for the Environment Protection Authority, told Mr Kevin Hudspeth, SM, that on 22 July last year an EPA officer went to the company's premises at Yarra Junction and found that waste from the stockyard and killing room was running off the property.

Mr Bolster said an amount of foetal and blood matter four metres wide had lodged on the south side of the property and that a heavy rainfall had caused some of it to flow over the south-west boundary of the property.

He said the matter then ran into a nearby water passage which in turn flowed into the Little Yarra River which joins the Yarra itself.

Mr Bolster said that in all fairness to Compton Holdings measures had since been taken by the company to make sure a similar run off did not happen again.

He said a spray system was now operating whereby waste was sprayed over a dumping ground. He also said the dumping paddock had been ploughed to make absorption easier.

"But, of course, we can't say that this sort of offence won't happen again once there is an-

other heavy rainfall or adverse weather conditions," he said.

Mr Bolster read out the two conditions of the water licence which the company had breached. These were: "Waste shall not be discharged within 20 metres of any site boundary" and "No leachate or contaminated run-off shall leave the boundaries of the site unless the licensee holds a licence to discharge waste to water issued pursuant to the Environment Protection Act of 1970". Mr Bolster said the company did not hold the licence mentioned in the second condition at the time the offence was committed.

Mr Bolster said a third charge of water pollution had been dropped.

Mr Colin Murphy, the company's director, was in court and pleaded guilty to having breached the two conditions.

CSO: 5000/7534

OPINION POLLS AT ODDS OVER NSW RAIN FOREST LOGGING

Sydney THE SYDNEY MORNING HERALD in English 24 Mar 82 p 14

[Article by Paul Ellercamp]

[Text] As State Cabinet works out its policy on rain-forest logging, opponents and supporters of logging have produced conflicting results from opinion polls designed to test public feeling on the issue.

Associated Country Sawmillers say a poll they commissioned, from the Roy Morgan Research Centre, showed 64 per cent in favour of logging Terania Creek under strict environmental conditions, as recommended by the Isaacs Report.

But a poll commissioned by the National Trust and the Australian Conservation Foundation, from McNair-Anderson, shows 69 per cent wanting rainforests protected from logging and clearing.

The Isaacs report — prepared by Mr Simon Isaacs, QC, after a two-year inquiry — was tabled in State Parliament last month.

It recommended that logging should go ahead under conditions designed to protect the environment and Aboriginal sacred sites and ensure the safety of other users of the area.

The report dealt only with Terania Creek. Now a Cabinet sub-committee is attempting to work out an overall rainforest logging

policy drawing not only on the Isaacs report but on departmental reports too.

Meanwhile, the Minister for Lands and Forests, Mr Gordon told Parliament last week that the Government had little choice but to allow logging of some North Coast rainforests. Outside State Parliament last week, there were demonstrations both supporting and opposing rainforest logging.

Conservationists are warning that they will not accept further encroachment by loggers on the State's remaining rain forests.

In the latest issue of Challenge — the ALP Left wing's journal — Mr Jeff Angel, a worker with the Total Environment Centre, said conservationists were adamant they would not compromise on the remaining rainforest areas after Terania Creek.

He added: "These include Grady's Creek, Flora Reserve, Nightcap Range, Washpool, Hastings Valley and the Black Scrub.

"A recent opinion poll by McNair-Anderson showed 69 per cent of people in NSW wanted rain forests protected from logging and clearing. Since the poll, environmentalists have decided to upgrade their campaign."

The McNair-Anderson poll of

756 people in both city and country areas was taken last December before the Isaacs report was released.

To the main question, Do you favour or oppose the protection from logging and clearing of the remaining rainforests in NSW? 62 per cent of country people and 74 per cent of city people said they were in favour.

The sawmillers say, however, that the question was unfair, because no rainforests nowadays are cleared as well as logged.

The sawmillers surveyed about 350 people, both city and country, over the weekend of February 27-28.

The survey asked if the NSW Government should accept or reject the Isaacs recommendation to allow logging at Terania Creek under strict environmental controls.

Sixty-four per cent said the recommendation should be accepted. 21 per cent favoured rejection and 15 per cent were undecided.

The executive director of Associated Country Sawmillers, Mr Keith Jordan, said yesterday the results of his survey reinforced the industry demand that the Government implement the recommendations of the Terania Creek report.

BRIEFS

SOIL CONSERVATION LEGISLATION--The WA Government will strengthen legislation dealing with soil conservation. The Minister for Primary Industry, Mr Old, said yesterday that the Soil Conservation Act would be amended to promote greater involvement by land-users and the community generally in helping to solve soil problems. The amending legislation should be introduced in the autumn sitting of State Parliament, which will begin today. Opening a two-day seminar on salt, sand and farming at Esperance, Mr Old said that the Government was mounting a big drive against soil degradation on agricultural and pastoral land. Not all erosion and salinity problems were because of crop and live stock production practices. A survey of farmers in 1955 had shown that about 378,000 hectares within farm boundaries was naturally-occurring salt lakes, salt channels and samphire flats. But it was true that clearing the native vegetation in the southern part of the State to allow farming had caused erosion and soil and stream salinity in some cases. Though the area of cleared land which had previously been used for cropping and was now salt-affected was very small in relation to the total cropped area, the affected area was increasing. The challenge now was to prevent further erosion and salt encroachment and where possible, to reclaim affected land. [Text] [Perth THE WEST AUSTRALIAN in English 18 Mar 82 p 29]

WILDLIFE PRESERVATION APPOINTEE--Mr Don Henry, the Moreton Island Protection Committee president, has been appointed Queensland Wildlife Preservation Society director. Mr Henry, 25, will be the society's first full-time official. He said he was enthusiastic about his appointment. "I will attempt to give the society a new image and a new lease of life," he said. "We have to show people that conservationists are not just a radical and ratgab few. "We have to become more responsible in order to get more response from governments and the community generally." He said the society would be adopting a new theme: "Wildlife is more than just the birds and the bees." He said the Queensland mentality of 'development at all costs' meant that conservationists had a tough period ahead of them. [Text] [Brisbane THE COURIER-MAIL in English 18 Mar 82 p 13]

TOXIC WASTE SITING PROBLEM--The State Government announced yesterday that it had abandoned plans to build a high-temperature incinerator and land fill at Avalon, near Geelong. Instead, similar facilities for the disposal of toxic chemical wastes will be built at the Board of Works sewerage farm at Werribee. The new site will be between two and 16 kilometres from the Avalon one. The site is the third chosen by the State Government in four years. It abandoned a proposed site at Dargile, near Heathcote, in 1979, after public opposition. The Minister for

Water Supply, Mr Jenkins, said yesterday that the Government had decided not to go ahead with the Avalon site because of objections from local residents and conservationists. But the group which headed public opposition to the Avalon site, the Lara Environment Action Group, said yesterday that it was against the latest proposal. Neither the Environment Protection Authority nor the Werribee Shire Council was aware of the Government's proposal until it was announced yesterday by Mr Jenkins and the Minister for Conservation, Mr Houghton. The town clerk of Werribee, Mr John Kerry, said the council was unhappy it had not been consulted on the site. He had learned of the decision by chance. He said the council was likely to object to the site. The Opposition spokesman on conservation, Mr Walker, said the Government's selection process seemed like a game of Russian roulette. "I am amazed that once again the Government has made an arbitrary decision. They simply haven't done their homework," he said. [Text] [Melbourne THE AGE in English 18 Mar 82 p 21]

FUNDING FOR CONSERVATION--The State Government would spend \$1.3 million to open Lysterfield Lake Park, east of Melbourne, to the public, the Minister of Conservation, Mr Houghton, said yesterday. Mr Houghton was launching the Government's conservation policy. He said the Government would spend \$315,000 on managing the recently established Bogong National Park and would spend \$150,000 improving day visitor facilities at Mount Buffalo. The Government plans to spend \$800,000 over five years to breed native fish to put into streams for anglers. Other programmes include a \$60,000 marine science study centre at Queenscliff and creating an Australian trust for conservation volunteers. The Government would also spend \$1,750,000 throughout Victoria buying land for conservation purposes, Mr Houghton said. Mr Houghton said the Government would establish the Wonnangatta-Moroko National Park later this year. The park would be the largest in Victoria, he said. Mr Houghton said the Environment Protection Authority's Melbourne airshed study would be operating by August. Mr Houghton said the EPA's complaints answering service would be extended to 24 hours a day, with an officer on duty to deal immediately with out-of-hours complaints. The Government would spend an extra \$100,000 on the work of the Victoria Archaeological Survey. [Text] [Melbourne THE AGE in English 16 Mar 82 p 20]

NSW CONSERVATION AREA INCREASE--The NSW Government yesterday declared two national parks and a nature reserve, taking the State's conservation holdings to more than three million hectares. The parks, near Gloucester and Tenterfield, and the nature reserve at Towra Point, on the southern shore of Botany Bay, are part of large additions to NSW reserves. Further parks will be incorporated in the next three months. The land at present declared as national parks and wildlife reserves makes up 3.75 per cent of the State's area. The State Government expects to build reserves up to 5 per cent of the total area of NSW, in line with international recommendations on wildlife preservation. [Text] [Canberra THE AUSTRALIAN in English 16 Mar 82 p 3]

WA REFORESTATION PLAN--Eight million trees would be provided from the Forests Department's nurseries under the new five-year State forest management plan said the Minister of Forests, Mr Laurance. The working plan was a statutory requirement under the Forests Act and covered the years 1982 to 1987. The trees would consist of three million pines for partmental use, two million pines for private requirements, 2.5 million karri seedlings for departmental use, two billion other species, mainly eucalypts, for rehabilitation purposes and a quarter of a million for private planting in rural area. [Text] [Perth THE WEST AUSTRALIAN in English 16 Mar 82 p 33]

LOGGING DECISION--The Upper Yarra Valley and Dandenong Ranges Planning Authority has decided not to reverse a decision to allow logging in Melbourne's water catchments. After seven hours of intense debate the authority yesterday voted to allow logging to continue in an area dominated by four tributaries of the Yarra River. It did not accept a rescission motion put by the authority's conservation representative, Mr Michael Willis, who has said that authority members were confused about the logging issue when a decision was made in February. But the authority did vote to advise the Minister for Planning, Mr Lieberman, that it believed the use and management of the four tributaries, McMahon, Armstrong, Cement and Starvation Creeks should be the subject of re-investigation with a view to excluding logging from the catchments. [Melbourne THE AGE in English 25 Mar 82 p 15]

EFFLUENT, CHEMICALS IN BAY--An EPA draft policy has proposed that big sewerage authorities stop discharging effluent into rivers flowing into Port Phillip Bay. The draft proposes that treated effluent from Dandenong, Springvale and Noble Park and Frankston sewerage authorities cease to be discharged into rivers in the Dandenong Valley area. It also recommends that industrial mercury and cadmium discharges cease, to protect people consuming fish from the affected rivers. The report claims that rivers in the Dandenong Valley area have been seriously polluted by toxicants from industrial discharge, sewerage effluent and effluent from construction sites. Affected rivers include Dandenong Creek, Patterson River, Kananook Creek and Mordialloc Creek. If the draft's recommendations are accepted, sewerage rates in the Dandenong, Springvale and Frankston areas could rise by \$30 a year. The report recommends that effluent discharge be phased out over three years and suggests sewage could be diverted to the MMBW south-eastern purification plant for ultimate disposal to Bass Strait. The acting chairman of the EPA, Mr John Alder, said yesterday that the draft policy was being issued for public review and comment before submission to the Minister for Conservation, Mr Houghton. "Public comment is an essential component in the formulation of any environment policy. It is important that people make their views known by submitting comments to the authority on this draft policy," Mr Alder said. Comments on the draft policy must be forwarded to the EPA secretary by 30 June. [Melbourne THE AGE in English 27 Mar 82 p 15]

REEF DRILLING THREAT--Oil drilling could still take place on tidal lands within marine parks despite legislation introduced this week, the Queensland

Conservation Council said yesterday. The council co-ordinator, Miss Elizabeth Bourne, said that because the proposed Marine Parks Bill, introduced into State Parliament on Tuesday, by the Premier, Mr Bjelke-Petersen, was subject to the Petroleum (Submerged Lands) Act 1982, there was nothing to prevent oil drilling from taking place in a Queensland marine park. But she said oil drilling was specifically prohibited in marine parks declared under the Federal Government's Great Barrier Reef Marine Park Act. On Tuesday, Mr Bjelke-Petersen said the intention of the Bill was to allow the setting aside of tidal lands and waters as marine parks. He said jurisdiction of the Commonwealth's authority stopped at the low water mark. Miss Bourne said that although the Marine Parks Bill appeared to have been modelled on the federal Act, it was a very poor imitation, with gross deficiencies in many areas, particularly those relating to public participation. "Groups such as fishermen, divers and naturalists could find that their views have been ignored by the State Government and their activities in marine parks severely restricted," Miss Bourne said. [Brisbane THE COURIER-MAIL in English 27 Mar 82 p 12]

CSO: 5000/7534

'ALL-TIME HIGH' SALINITY IN WESTERN DISTRICTS

Dacca THE NEW NATION in English 22 Apr 82 pp 1, 8

[Text]

Salinity in rivers and canals in the western districts hit all time high in the second week of this month threatening the water-fed industries and the irrigation system in the region with closure.

The alarming situation arose due to low and weak flow of water below the Farakka Barrage in the Ganges giving into the inflow of saline water from the Bay of Bengal.

Authorities monitoring the situation were worried at the rate and extent of deterioration. The salinity as recorded on April 10 rose to 14,000 micromos which is an all time high. The last highest record was 13,500 micromos in mid-April 1976 when India went for unilateral withdrawal of the Ganges water in the upper stream.

Informed sources said the abnormal situation this year arose from withdrawal of more water in the upstream by India.

The sources, however, declined to say the volume of water that was being released through the Farakka Barrage

but said it was lower than the previous year's.

The JRC's Standing Committee at its recent meeting in Dacca is learnt to have reviewed the situation under the five-year short-term agreement on sharing of the Ganges water signed in 1977.

The Joint Standing Committee comprising officials of Bangladesh and India visited Bheramara where the recording of the available flow of Ganges water is monitored at the Hardinge Bridge by the observation team.

The Standing Committee is expected to submit its report to the next 'review meeting' of the Indo-Bangladesh Joint Rivers Commission expected to be held next month.

As a result of the adverse effect of salinity on the Sundarbans regeneration of plants has 'alarmingly' decreased while the mortality rate of trees increased to a great extent.

According to a study carried in a 'sample area' of 50-1 acres in

the Sundarbans, the Forest Department found that the existing stock is being decreased, and the prospect of regeneration of plants has become bleak due to increase of salinity.

Vast tracts of cultivable lands in the district of Khulna have also been affected by the salinity as reports are pouring here in the capital city. Instead of surface water, the peasants will now have to depend on underground water for irrigation.

The Khulna Newsprint Mills and the Goalpara Power Station also are faced with serious problem because of salinity in the water.

Both the units have been using barges at a much higher cost for procuring sweet water from far-off places to keep the mill and the power station running.

INDUSTRIAL POLLUTION IN MADHYA PRADESH CRITICIZED

New Delhi INDIA TODAY in English 15 May 82 pp 112, 115

[Article by Sreekant Khandekar]

[Text]

IN THE headlong march towards 'progress', nations seldom pay any attention to the concomitant evil of industrial pollution. India is certainly no exception. The district headquarters of Ratlam (population: 160,000) in north-west Madhya Pradesh provides a classic example of misplaced priorities. Two industrial units—Ratlam Alcohol and Jayant Vitamins—have been discharging on an average 480,000 litres of organic and 100,000 litres of inorganic effluent everyday into the nearby Kurel river. Years of litigation have failed to convince the industries—one of which, Ratlam Alcohol, is a state government undertaking—to remedy the situation.

Ratlam's pollution problem originated several decades ago, as soon as one of the two industries came into existence in the early '60s. As a divisional office for Western Railway, the city has accommodation facilities on its outskirts for an estimated 20,000 railway staff and their families. It is also the water filling point for trains plying the Delhi-Bombay route. Additionally, about 7,000 people either board, disembark or pass through Ratlam daily. The total water requirement for the railways alone is in the region of seven million litres a day, half of which is required for drinking purposes.

In the '60s, the railway authorities had decided to tap the neighbouring Kurel river, in order to meet their water requirements. Land was acquired and a dam constructed on the Kurel—at a point about 12 km from Ratlam. A pumping station and a filtration plant were installed and the entire work was completed in 1960 at a cost of Rs 35 lakh.

Worsening Problem: But for the railways, it was virtually an exercise in futility. Ratlam Alcohol came into being in 1963 and production started soon after. As the years went by, the pollution problem only grew worse. In the mid-seventies Jayant Vitamins started production and in the same period two other smaller units—Shasmi and Sajjan Chemicals—started discharging their effluent into the Kurel.

At first sight Jayant Vitamins and Ratlam Alcohol, guilty of the same lack of concern, present largely different pictures. Outside Jayant Vitamins (turnover: Rs 4.5 crore, number of employees: 350) flows a dark and thin stream of effluent which attracts little notice but flows quietly down a canal which joins the Kurel five kilometres upstream from the railway barrage.

On the other hand Ratlam Alcohol presents a picture which, in the words of a local resident "would drive the devil himself back to hell". The reddish brown effluent is released into a 40-acre field adjoining the factory to dry creating an unforgettable stink.

Through most of the year, the problem is checked by bunds that have been created to hold back the stream of effluent. The railways have installed pumps at these points to disperse the liquid on the adjoining land. But

when the rains come—Ratlam receives on an average 40 inches annually—this arrangement promptly collapses and the effluent gushes towards the railway barrage. The alcohol plant's system of drying also comes to nought and the foul liquid cannot be held back.

The level of pollution is so high that even after filtration, according to a health inspector's report, for three to four months of the year, the water is unfit for human consumption. Fumes a railway divisional engineer: "We have had this nuisance for so long. Can't anyone do anything about it?" The plant managements remain indifferent.

Delay: The railways took the four units to court in 1977. In January 1978 the district court's judgment went in favour of the railways. But the case was taken to the High Court which granted a stay. The case is still pending four years later. The State Board for Prevention and Control of Water Pollution also took the issue to court but nothing came of that either.

While the railway employees and their families are paying the price for industry's indifference, they are nevertheless an organised body and at least have alternative sources of water, however inadequate that may be. The people who have been entirely forgotten are the docile residents of the villages alongside which the effluent passes on its way to the Kurel. They can't afford to go to the courts, and their legitimate grievances have never been heard. They have had to simply live with the problem.

Chhoto Jarwasa, situated seven km from Ratlam, is one such village. It has some 175 huts and a population of 750. According to Shankar Lal, a tall, young man, a group of villagers had been to see the collector and had later gone to the alcohol plant some years ago, to complain about the pollution but to little visible effect. Adds Ram Narayan Bhuwanji, a short,

but energetic resident who is also a member of the panchayat: "Once, a long time ago, we used to get clear water in this stream. Today we don't and an open well, 200 yards away, provides us dirty coloured water. We have lost some heads of cattle too because of this dirty water." It has not occurred to these villagers to demand compensation.

Unchahera's Plight: The worst affected of the entire lot is certainly Unchahera, which, as its name suggests, is perched on a hill. Unchahera is a two km walk from the railway barrage, upstream along the Kurel. The river forms a loop at this point and encircles Unchahera and when it rains, the village is totally cut off for days on end. A tube-well some distance away becomes inaccessible. Says Dhanmal Lal: "We primarily depend on catching rain water in vessels before it reaches the ground. We dare not drink from the river at that time."

The factories have been getting away scot free although the Water (Prevention and Control) Act, 1974 clearly states: "No person shall... permit any poisonous noxious or polluting matter determined in accordance with standards laid down by the State Board to enter... into any stream or well." And the discharge of none of the units conforms to the standards stipulated by the Board. K.C. Kanungo, manager of Ratlam Alcohol which employs 175 men, states one reason after another to explain why 19 years have gone by without any concrete progress.

The effluent treatment consists of two phases: anaerobic lagoons first break down most of the organic pollutants and later aerobic treatment further reduces organic pollutants. Now, after 19 years, Ratlam Alcohol is finally going in for anaerobic lagoons. The cost: a paltry Rs 3.80 lakh. But according to an expert's report this first phase is by itself inadequate as "the quality of treated effluent will not be suitable for discharge on land or in inland water".

Symbolic Effort: R.P. Sinha, factory manager at Jayant Vitamins cites the closure of the factory for nine months in 1980 as a major reason for delay and says that work is now in progress for a Rs 18 lakh effluent treatment scheme.

Jayant Vitamins has also been accused of scuttling a joint scheme for treatment for the four units which pooled money to appoint a Bombay firm, Candy Filters, to study the problem in mid-1977. It took two years for Candy Filters to submit its final report at the end of which Jayant Vitamins walked out of the arrangement after raising objections on certain points. The whole plan collapsed and it was back to square one. In effect, two years time had been bought for a mere Rs 25,000, which was the fee paid to Candy Filters to prepare the report.

An environmentalist in Bhopal summed up the situation ruefully: "Until environmental book keeping becomes accepted, you can bid goodbye to a pollution-free society."

THERMAL PLANT CAUSES SOOT PROBLEMS IN PUNJAB TOWN

New Delhi INDIA TODAY in English 15 May 82 p 115

[Article by Gurmel Singh Sra]

[Text]

AT THE time of its inauguration in 1969 the Rs 131-crore Guru Nanak Dev Thermal Plant at Bhatinda in Punjab was hailed as a giant stride in the state's development—and no doubt it was. However, Bhatinda's 1.25 lakh citizens have discovered that while progress is always painted in glowing colours, in practice it often turns the world a dull, grimy grey. Today the city lies under a permanent blanket of smoke, fly-ash coats every surface and a good, deep breath is likely to wind up a racking cough.

Although the 440-megawatt capacity plant can burn 5,000 tonnes of coal daily in its four units, due to continuous maintenance operations the usual consumption is around 3,000 tonnes in two or three units. The ash content of the coal is around 40 per cent which means 1,200 tonnes of ash daily—or about 1 kg per citizen. The plant is fitted with electro-static precipitators (ESPs) to prevent ash from coming out of the chimneys along with the smoke but these broke down after six years of functioning.

Bhatinda's citizens responded by going on the offensive and forming an anti-pollution committee. Last month, the committee petitioned the then Governor, Aminuddin Khan and Prime Minister Indira Gandhi, asking them to prod the plant management into replacing the precipitators.

Mass Action: G.S. Chowdhary, who is chairman of the anti-pollution committee, is already distributing handbills calling the public to a protest meeting next fortnight. The committee has been trying to tackle the

problem from the top by lobbying ministers and government secretaries in Chandigarh, the state capital, for the past five months. The meeting marks a change in tactics.

Thermal plant authorities fight shy of admitting there is a pollution problem, maintaining that hardly any fly-ash is emitted or even if it is, it doesn't do any harm. While according to the plant's Superintendent Engineer (Operations) S.C. Mathur, "The fly-ash emitted is hardly 1 per cent of the total ash produced," the anti-pollution committee members quote a report of the Punjab Air Pollution Board which estimates the amount of fly-ash pouring out to be 20 to 30 per cent of the total ash produced.

The plant management is responding to the problem but in typically bureaucratic slow-motion. "We have started negotiations with Bharat Heavy Electricals Ltd (BHEL) to get new ESPs," affirms Mathur but he declines to state how soon the devices could be bought and installed. "Government sanction, funds and time are needed," he says. However, another engineer admitted that the foot-dragging is due, not so much to the cost of the ESPs but to indirect costs—the power and revenue losses—of shutting down the plant in order to repair or replace the ESPs.

Costly Maintenance: While the four new precipitators will be expensive—an estimated Rs 10 crore—running the plant without them is not cheap either. Plant engineers say that without the ESPs the induced draft fans are in constant need of repair which costs about Rs 20,000 per fortnight.

The ill effects of the high level of fly-ash

pollution are becoming increasingly obvious. A Bhatinda physician, Dr. Nirmal Kumar Singla, secretary of the Punjab Medical Association, notes a steady increase in nasal, eye and respiratory complaints from his patients over the last several years. An agriculture department officer in Bhatinda points out that the ash-laden air damages crops. In varying degrees, depending on proximity to the plant, several thousand acres are affected by pollution, he says. But what most people complain of is simply the ever-present pall of soot.

Ironically, Bhatinda gets only the nasty side-effects from the plant and none of the electricity generated. The power is first transmitted to Ludhiana, an industrial centre, and then distributed over the Punjab Electricity Boards' grid system. In the eyes of Bhatinda's citizens the plant has turned out to be, quite literally, a dirty trick.

CSO: 5000/5741

INDIA

BRIEFS

HIMALAYAN FORESTS ENDANGERED--Dehradun, April 19 (PTI)--The lower altitude oak forests in Western Himalayas, particularly in Himachal Pradesh are being threatened to extinction due to biotic pressures and expansion of temperate agriculture. The depredation of the oak forests has its impact on the fauna system. The plight of cheer pheasant has been pinpointed as a clear example of this phenomenon by an expert committee which recently surveyed the area. It has suggested that protection of these type of forests which is well represented in the Tirthan Valleys should be a major goal of the conservation strategies in Western Himalayas. The expert committee has also noticed 'a rarest forest type' near Karol in the steep tributary valleys of the Garhan Nalla. [Text] [New Delhi PATRIOT in English 20 Apr 82 p 5]

CSO: 5000/7050

MANILA BAY DESCRIBED AS HEALTH HAZARD

Manila BULLETIN TODAY in English 19 Apr 82 pp 1, 13

[Text] Health Minister Jesus Azurin urged local health and national anti-pollution officials yesterday to put up signs prohibiting people from swimming in Manila Bay.

"It is about time signs prohibiting swimming in the bay area are put up," Azurin said, noting that the bay has been polluted for a number of years.

He said it was the responsibility of local health officials to warn the public against swimming in polluted waters that cause disease like cholera, typhoid fever, poliomyelitis, and certain skin infections.

"We cannot afford to risk the public's health to diseases which might result from contaminated waters," Azurin said.

The health minister reacted to a report that Manila Bay, from the Cultural Center complex to the mouth of the Pasig river, was highly contaminated with coliform bacteria.

The report was based on findings of the National Pollution Control Commission which said that the area did not meet its standard bacteriological limit for natural bathing waters.

In April 1980 it was recalled, the First Lady Imelda R. Marcos warned the public against swimming in Manila Bay.

Azurin also reminded health officials to regularly inspect swimming pools and public bathing places, including those operated by hotels, resorts, apartment houses and clubs.

Water samples from swimming pools, he said, must be collected weekly, especially during summer months when the pools are always in use.

CSO: 5000/5737

OVERUSE OF PESTICIDES KILLS FISH IN SOUTH, CENTRAL REGIONS

Bangkok DAO SIAM in Thai 8 Mar 82 pp 3, 10

[Article: "Excessive Amounts Used In the South and Central Regions"]

[Text] The Department of Fisheries has confirmed that fish in natural bodies of water in the south have been killed by the chemicals mixed in with the plant pesticides.

Scientists from the Department of Fisheries have twice joined with the Department of Agricultural Techniques in conducting surveys to determine the cause of death of fish in the south. Most recently, which is the third time, they made surveys in Khao Chaison District, Phathalong Province. This survey was done this past January and February. Data was collected from the fishermen and samples were taken in order to study the remaining poisonous substances, to examine the bacteria in the fish that died from this and to examine the bacteria in the water.

A report from the Department of Fisheries has revealed the results of this latest investigation. It stated that the fish in the south died from chemicals that had been mixed in with crop pesticides, large quantities of which had gotten into the natural water sources. In particular, the concentration of "dickdrim" exceeded normal levels by 100 times. Because of the large concentration of this type of chemical in the water, the resistance of the fish was lowered and the bacteria in the water killed the fish. The fish developed sores and in the end died.

The report also said that this chemical has a very strong effect. Normally, the fish that live in various waters do not die from this because they can move to other area. As for the period during which this disease spread, this happened during a period when there was a long drought that was followed by heavy rains, which washed this chemical into the water, and flooding in the south.

As for the areas and types of fish that were surveyed and found to have this disease, these included Phathalung, Songkhla, Yala and Nakhon Sithammarat provinces. The types of fish included the snakehead, gourami, trichopodus and the Thai climbing fish.

The report stated that the Department of Fisheries has also found this disease in the central region near Bangkok. For example, it has been found in Suphanburi, Nakhon Pathom and Rayong provinces. As for the north and northeast, the disease has not been found in these regions. This is probably because the farmers in these two regions do not use this type of pesticide very much.

Besides this, this survey found that the pesticide used to kill rubber tree stumps, a pesticide that is used frequently by the farmers in the south to kill the stumps in order to grow new varieties of rubber trees, also causes this type of disease if the pesticide is used continually over a long enough period.

The view of the scientists from the Department of Fisheries is that the use of this type of pesticide is causing this type of disease to spread more and more because the farmers are using excessive amounts. The way to solve this problem is to recommend to the farmers that they use types of pesticides that contain as little of these substances as possible and that they use them for as short a period as possible. Even though the chemicals found this time are chemicals that the Dangerous Substances Control Board of the Ministry of Agriculture has put on the controlled [list], this problem has still occurred.

11943

CSO: 5000/5717

DDT POISONING SAID TO KILL FISH IN CANALS

Bangkok BAN MUANG in Thai 20 Feb 82 pp 1, 2

[Article: "Still No Way to Solve the Problem; Eating Raw Fish Prohibited"]

[Text] DDT, which is a chemical used to control plant pests and weeds, is getting into the canals. The fish waste away, with nothing left but the bones. The people have been warned not to eat raw fish.

The disease that is spreading among fresh-water fish in the canals in Phthalung Province and in Bang Khuwiang Commune, Bang Khuai District, Nonthaburi Province, causes the bodies of the fish to rot from the tail to the middle of the body. As for some of the fish, only the bones are left. Strong fish can survive but weak fish die quickly.

Yesterday morning (19 February) at the Ministry of Agriculture and Cooperatives, Mr Wanit Charikun, the deputy director-general of the Department of Fisheries told reporters that this disease that is affecting fish is not really a disease. Rather, this is happening because the fish are being poisoned by a chemical, large quantities of which have gotten into the canals, that causes the fish to waste away until nothing is left but the bones. This poisonous substance is a substance that is contained in insecticides and pesticides and in the chemicals used to kill para rubber tree stumps. When the heavy rains and floods hit the south, the flood waters washed this poison that was left in the soil into the various canals. When the floods receded, the concentration of poison in the canals increased and the fish received large doses of poison.

As for the provinces where the fish have been affected, Mr Wanit said that the provinces affected are Phthalung, Songkhla, Nakhon Sithammarat, Yala and Narathiwat. As for Nonthaburi, at present, there have not been any reports about fish in the canals coming down with this disease. The types of fish that have come down with this disease include the snakehead, trichopodus, catfish and eels.

However, Mr Wanit stated that, at present, the Department of Fisheries has sent scientists to collect samples of the fish for analysis. And based on the analyses of the poison in the fish, it does not appear that this poison poses any great threat to those who eat such fish. But those who eat fish should cook the fish well and not eat them raw.

Concerning this matter, Mr Bunua Prasoetsuwan, the deputy minister of agriculture and cooperatives, told a reporter in an interview that, at present, the Department of Fisheries has sent officials to supervise the use of crop pesticides and chemicals used to kill rubber tree stumps. This is being done in order to keep this substance from being washed into the canals by the rain. The fish are definitely rotting like this because of the poison used in the pesticides to control fungi, insects, weeds and rubber tree stumps. The area where the fish have been affected is an area where the farmers and rubber growers have used the pesticides in the rice fields and rubber plantations. In addition, the flood period in the south is the period when rice heads, a period when it is necessary to use much pesticide. Thus, when it rains, the poison remaining in the soil is washed into the canals.

Mr Bunua also said that the substances remaining in the soil include: dieldrin, 0.13 ppm; sevin, 0.01 ppm; and furadan, 0.15 ppm. These substances were probably washed into the canals and interacted with the bacteria in the water and with the fish, causing the fish that had cuts to rot and to be covered with white streaks and red spots.

The reporter asked how the farmers' use of poisonous materials would be controlled. Mr Bunua stated that, at present, poisonous materials are used freely, even though poisonous materials are on the control list in accord with the Poisonous Materials Control Act of 1967, which was amended in 1973. However, it is not certain whether or not additional materials will be added to the current list of 123 registered poisonous materials that are under the control of a committee composed of officials from the ministries of agriculture, public health and industry. This will have to be discussed and further research will have to be done.

In his capacity as chairman of the Poisonous Materials Use Control Committee, Dr Thaloeng Thamrongnawasawat, the undersecretary of the Ministry of Agriculture and Cooperatives, told a reporter that the committee has controlled all poisonous substances. For example, the committee resolutely prohibited the use of DDT a long time ago. As for supervising the farmers' use of poisonous materials, an effort must be made to make them understand things and have them be more careful in using such substances.

Dr Thaloeng said that, concerning poisonous materials in general, the ministry does not want people to use such substances. But since it is not possible to fully implement a "home" [Niwet Withaya] system to eliminate crop pests, weeds and so on, it is still necessary to use these poisonous substances. Because when a disease spreads among the crops, there is no way to stop it except by using poisonous substances.

11943
CSO: 5000/5717

THAILAND

ENVIRONMENTAL PROTECTION FAILS TO HALT CHAO PHRAYA POLLUTION

Bangkok SIAM RAT in Thai 13 Mar 82 pp 1, 12

[Article: "Chao Phraya Polluted For 200th Rattanakosin Celebrations"]

[Text] The National Environment Board is worried that pollution in the Chao Phraya River will become even worse this year because of the inefficiency of the sectors in controlling the thousands of illegal factories that discharge waste into the river.

Mr Kasem Sanitwong Na Ayuthaya, the secretary-general of the Office of the National Environment Board, told SIAM RAT that, at present, the Chao Phraya River has reached a point of crisis because of pollution. Little water flows down to the Bangkok area and there is little water from the north because of limiting the amount of water released from the northern dams, which release only 70 cubic meters per second.

"This pollution crisis began in January. In April, which is the dry season when there is very little water, the crisis will become even more severe. This will coincide with the government's 200th Rattanakosin celebrations," said Mr Kasem.

The secretary-general pointed out that the important reason why the Chao Phraya River is in such a state is that the sectors responsible, that is, the Department of Industrial Works and Bangkok Municipality, have not supervised things everywhere. Even though the Department of Industrial Works has the power to supervise all the factories, it has been able to supervise only a hundred or so of the thousands of factories. And Bangkok Municipality does not have any effective measures for eliminating the discharge of waste materials and waste water into the Chao Phraya River.

For these reasons, during the period of the Rattanakosin celebrations, especially the royal water procession, which will start on 5 April, Mr Kasem stated that the Office of the National Environment Board has told Bangkok Municipality to supervise the discharge of waste water from the people's homes, especially in the northern area of the Chao Phraya River. At the same time, it must also stop and prevent garbage from being thrown into the river. It has also asked the Royal Irrigation Department to release a particularly great amount

of water from the dams to wash away the polluted water. It has requested that approximately 700 cubic meters per second, or 10 times the amount normally released these days, be released.

Concerning this, SIAM RAT has contacted and asked for details from the Royal Irrigation Department. Mr Thanom Khlaikhachon, the deputy water allocation chief, said that he is certain that the Chao Phraya River will not be polluted during the time of the royal water procession. But as for releasing a large quantity of water, this may damage the rice fields. This is because it is now the season for planting the second rice crop and the fields need much water from the dams. However, it is believed that the Chao Phraya River will not be polluted that day, especially to the north of Saphan Phut. However, the section downstream near the mouth of the gulf may be polluted.

11943

CSO: 5000/5717

CZECH EXPERTS DISCUSS PROTECTION OF ENVIRONMENT

Prague TVORBA in Czech No 11, 17 Mar 82 pp 12-14

[Interview with CSSR officials by Milos Prosek, director of domestic political section of TVORBA, at TVORBA editorial offices, date not given; prepared for publication by Vaclav Snyder]

[Text] Each of us, with every step that we take, encounters problems related to the management and preservation of the environment, in cities and in towns, in industry and agriculture, at home and on vacation. For this reason we invited to our editorial offices for an interview leading functionaries and employees who are concerned in a systematic way, whether directly or indirectly, with this area; Jaroslav Beska, chairman of the Most District National Committee; Professor Eng Frantisek Hron, Doctor of Science, chairman of the Central Committee of the Czech Union of the Preservers Nature; Professor Eng Vladimir Krumphanzl, Doctor of Science, director of the CSAV Microbiology Institute in Prague; Doctor Eng Vladimir Kubanek, sectoral chief within the education and Science Department of the CPCZ Central Committee; Eng Frantisek Kupka, representative of the technical director of the Vitkovice Building Works on Ostrava-Vitkovice; Eng Karel Nutil, Deputy Minister for CSSR technological and investment development; Eng Frantisek Sramek, CSR Minister of Development and Technology and chairman of the environmental committee of the CSR Government. The interview was conducted by Milos Prosek, director of the domestic political section of TVORBA.

[TVORBA] Party, state and economic organs have been devoting constant attention to the management and protection of the environment. This issue was also taken up by the Sixteenth CPCZ Congress. What results have been achieved in our country in the management and protection of the environment, and what are the implications of the Congress discussions for your work in the above areas?

[Nutil] The party congress concerned itself in a broad way with CPCZ economic and social policy. The broad area of environmental management and protection,

which affects literally all aspects of human activity, is one of the inseparable components of this policy. The utilization of natural resources is economically necessary but often, however, disrupts the balance of nature. It is sufficient to recall the surface mining of brown coal in the North Bohemian Kraj, nevertheless, it is within the capabilities of contemporary science and technology to limit the above negative consequences, to cope with them and even to eliminate them. It has been shown that every human intervention in nature which is not based on scientific findings may have serious consequences, the elimination of which then demands significant efforts and resources on the part of society, if we wish to preserve the environment which surrounds us at least an acceptable state.

[Sramek] Our experiences in coping with a task as demanding as caring for the environment have taught us that we can achieve positive results only rarely on the basis of isolated projects. By the same token, the more there exists an atmosphere of close cooperation, a truly constructive interplay in the interest of environmental protection and management, created by society from individual work sites and individual local national committees, right up through larger integrated units--production concerns, agricultural factories or organizations of okres and kraj significance, than the more favorable are the total results we are able to achieve, the greater is the advantage derived by both society and the individual from the work which is performed. This serves to emphasize that the concrete management and care planned of the environment must be a composite "mosaic" of specific measures and techniques, because in the field of ecology it is true that single positive actions are capable of creating an aggregate success.

Among other things, this is demonstrated by the success we have had, for instance, in our struggle against excessive noise. Currently, during the formulation of new preliminary and project documentation at the territorial level, use is made of the guidelines issued by the CSR and SSR ministries of development and technology for the design of population centers with a view to protecting the inhabitants from above average noise levels. During the decision making phase of development, conclusions are drawn at the present time based on the so-called noise maps compiled by the health service for 81 okres and kraj towns.

While as recently as 1978 one met with instances of the construction of residential complexes in very noisy areas, today there is a consistent application of the principle of diverting heavy freight transportation away from inhabited areas. We have achieved our first successes in the application of secondary measures for the protection of apartment complexes from noise caused by transportation. The first anti-noise earth embankments and barriers have been built. The production of specialized panels has been initiated, and matters have led to the design of custom foundations for the so-called barrier houses of all developing construction systems. We have made progress in the improvement of the acoustic properties of the outer coverings of buildings in conjunction with an improvement in their thermal efficiency. During the seventh five year plan, production will begin of acoustically more sophisticated windows. There has been a substantial improvement in the supply situation with regard to construction materials and damping components for acoustic insulation.

The potential in the regulational measures has been utilized by national committees in the management and directing of transportation; police units have developed a monitoring system for vehicle noise levels and the visual inspection of muffler systems and body soundness.

Favorable results have also been achieved at the workplace, and have been manifested in an increase in the quality of the work environment for more than 20,000 workers who have been subjected previously to abnormal noise levels. A reduction in noise levels has been especially evident in the category of employees threatened by noise above 100 decibels, which represents a significant success from the health standpoint. A number of organizations are allotting up to 50 percent of their resources to health improvement measures leading to a reduction of noise at workplaces; this is also a significant change from the past.

Today I am able to state that there does not exist a single workplace with excessive noise which has not been inspected by the health service and which has not been presented by the health service with a binding directive which establishes the procedure to be followed in its struggle against high noise levels. In the machine building industry, measures have been developed over a broad spectrum aiming at reducing the noise output of the machinery which is produced. The noise output of approximately 110 types of machinery has been reduced, 31 of which are machines for the textile industry which are now in mass production.

It is possible to summarize by saying that the successes achieved in the struggle against high noise levels indicates the advantages in selecting a concentrated, coordinated approach on the part of all agencies, starting from the center and extending all the way to factories and national committees. The result is then a substantial improvement in the living conditions of our inhabitants.

[Nutil] At present we are trying to see to it that a conscious concern for the environment and natural resources becomes an integral component of the entire national technical and investment policy. Every product, technology or capital investment project represents a specific form of this policy. Any kind of poorly thought out innovation or newly developed technology which does not take account of the environment can cause serious damage not only to nature but, in the final analysis, to the national economy as well. Let us remind ourselves, for instance, how much land we have per inhabitant and how much we lose each year to capital investment projects! The air, water, and land are essential resources of our national economy without which, just as without other values, humanity would not be able to exist--why then have we completely unnecessarily deprived ourselves of them on more than one occasion?

We are still not capable of sufficiently respecting the resources with which our country provides us. The objectives of scientific and technical development in the CSSR which we want to achieve prior to 1990 are directed, in this area, to the formation of preconditions so that the Czechoslovak economy will be capable of utilizing, most efficiently and with the least waste, both our

own and imported energy resources, raw materials, fuels and materials, We want to use them in such a way that nothing goes to waste. Such an efficiency oriented approach to the utilization of available resources will have a dual effect, the other side being manifested, however, in greater environmental quality. At the same time, we are all aware that this is a very complicated and demanding task, and that it will not be easy to realize....

[Sramek] During the implementation of the objectives we are discussing, we must place our emphasis above all on responsible conceptual and managerial work. We are also striving for this in the CSR Environmental Council, which not long ago adopted a program of measures based on the content of the congress discussions and programmatic announcement of the federal government and the CSR government. This document contains tasks related to concern for the environment for the 1981-1985 period. It is a compilation of all the tasks which will be worked on in the field of environmental management and protection by individual contracting or central organs, among them ministries in particular. We are attempting, that is, to implement a comprehensive conception of environmental management and protection: we are including the widest possible range of fields which are concerned with the water, the land and the air, with the health of the population and the protection of other components of nature, with waste utilization, with the development of green belts in towns, with education in a concern for the environment, and with protection from noise. The quality and quantity of this concern, however, clearly depends as well on the possibilities for our economy. We all know, for instance, how costly it is to build a waste water treatment facility, desulphurization equipment, or fly ash separators....

[Beska] We cannot, however, carry on in the management and protection of the environment without the volunteer activity of people. The best measures in the world would be of no use to us if citizens remain as passive observers in the concern for their surroundings. Many times we are not even able to express the value of their work well enough. Let us take, for instance, the planting of forest trees which are more resistant to emissions: by means of this project we are attempting, for instance, to return the disrupted water equilibrium to the Krusne mountains, without which streams, rivers, and even dammed reservoirs which serve as a source of potable water for a wide expanse of North Bohemia would begin to dry up. And if the foresters were not assisted by students, school pupils, and brigade participants from many enterprises, organizations and National Fronts, they would be scarcely capable themselves of replacing the destroyed stands of trees. In several years this would have immense ecological and economic consequences.

The activity of people contributes other favorable consequences as well: citizens who for instance have participated in the planting of bushes or trees, subsequently conduct themselves much more sensitively in relation to their environment, not allowing vandalism and protecting every planted seedling. We have convinced ourselves of this at home in Most, which is now often called the town of roses. In places where the inhabitants of a house have planted their own rose bushes, it is rare that any of them are ever destroyed. In certain residential complexes, on the other hand, where the showing of

flowers as a part of the construction, we often encounter situations when they have been destroyed.

I am the delegate of the North Bohemia Regional National Committee--I am able, therefore to cite numbers expressing the results which have been achieved in our region in project Z. Completed construction of small water reservoirs, swimming areas, water main networks, kindergartens, stores and other facilities amounted, during the most recent electoral period, to a value of several billion korunas. Nor does this enumeration express the social value of water reservoirs which significantly influence the microclimate where the reservoir or small pond is located; similarly, one could mention as well the results of other projects in which our citizens have participated....

[Sramek] The utilization of the activity of people now depends above all on the consistent administration of the management and protection of the environment during the Seventh Five Year Plan. At the national committee level, therefore, particular attention will be devoted to the activity of the commission of national committee councils for the environment, which influences significantly the performance of administrative functions in the sector concerned with the protection of the air, the water and the land, as well as other components of the environment. Especially in oblasts where there is a greater threat to the environment, they are becoming not only consistent guardians of the condition of the environment, but also the organizers of solutions to a number of burning questions which one encounters in the above oblasts.

[Beska] In the threatened oblasts the situation is truly complicated. To illustrate: Mostecko is one of the smallest okreses in our republic, measuring not quite 500 square kilometers. One hundred twenty thousand people live in this small expanse. Two thirds of the north bohemian brown coal basin, which intrudes on this space, takes additional habitable space from Mostecko. Forty million tons of coal are mined in the okres.... There are also chemical plants on the above space, as well as two thermal electric power plants. At the same time, along with economic development, it is interesting that matters have led for us not only to problems but to a substantial improvement in the environment. This reality has been influenced, for instance, by a new locating of an okres town in which 60,000 people reside.

I would like now to return to an issue about which we have already spoken, namely to the need to resolve comprehensively questions related to the protection and management of the environment. The health of the children of Mostecko is clearly improved by the organization of a stay for them in nature. Each year, 12,000 boys and girls study for 3 weeks at schools in nature. This is a very successful program, by means of which we are speaking to moderate the effects of emissions. We have already succeeded at Mostecko in substantially reducing the ash fall--but we are far from satisfied. All of the problems cannot be solved by the national committee alone. As Comrade Sramek has already stated, the main responsibility for eliminating the consequences of environmental pollution should be borne by those who cause it. Unfortunately, so far we are meeting here with a level of irresponsibility which is difficult to comprehend. It has not been long since we had to assess

a fine of one and one half million korunas on the Kormorany power plant; our employees had determined that the workers at the power plant had been shutting off the separators at night, while stating in their reports that they had been operational. Clearly, each one of us really must concern himself with questions of environmental management and protection....

[Hron] Interest in a health environment is growing continually among the general population. This is indicated by the increase of the membership base of our newly formed organization, the Czech Union of Preservers of Nature. Its task is, briefly, to bring together citizens of our republic to participate actively in caring for nature and the environment.

We are attempting to see to it that as many citizens as possible are acquainted with the issues involved in the preservation of nature and with the government programs related to this area. We have founded, for example, a people's university which familiarizes those who are interested with the issues involved in the management and protection of the environment; we are also preparing a more specialized university, the curriculum of which will be focused on the fields of agriculture and forestry. We are working in conjunction with the most knowledgeable experts and are issuing our own magazine.

We are concerned above all, however, that union members take an active role in the management and protection of the environment, that they utilize the knowledge and abilities of their own professions and participate in the activities of the Union of the Preservers of Nature according to their skills. We require people with a good theoretical education as well as those citizens who work primarily with their hands. In our ranks are people from towns as well as cities, and we are beginning to intensify our cooperation with entire production enterprises, sectors and organizations which influence the utilization of our natural wealth or which bear responsibility for threatening it. In this regard, a system of collective membership has proven itself within our union; an example of such a member is the Kladno United Steel Mill, with which we have reached an agreement concerning specific types of cooperation, for example in resolving the problem of the quality of separators, but also the problem of the quality of waste waters, and in other areas related to natural preservation. The objective of our organization is to contribute to a situation in which each production organization and institution develops its activity to a degree which will be in maximum possible accordance with the principles of the management and protection of the environment.

[Sramek] Unfortunately, a lackadaisical attitude on the part of some often offsets the devotion of others. Even though we are mentioning in our discussion a number of positive examples, we cannot yet be fully satisfied with the way in which nature is still often treated. This is attested to by the periodic inspections undertaken by the CSR attorney general's office; the outcome of these inspections is often the discovery that not even state organs are adhering to the regulations regarding environmental management and protection.

A number of shortcomings have, for instance, been identified in the upholding of the law concerning the preservation of air quality. Likewise, there are frequent violations of the law concerning water, which establishes the responsibility of investor and other organizations and planning agencies to allow the utilization of residential complexes, factories and operations only in the event that the removal of, or other detoxification procedures for, waste water have been provided. Universally binding regulations are not being respected during plan preparation or during pre-design and design preparations. Sometimes, legal responsibilities only seem to be fulfilled; for instance, the sewage system of a residential complex may empty into an existing waste water treatment facility, but this facility may already be significantly overloaded and therefore unable to fulfill its designated function. Similar abuses have cropped up as well in agriculture and in other sectors of the national economy....

[Kupka] The relationship between production and the environment is very complex. At our facility in Vitkovice, the Klement Gottwald Iron Works and Machine Building Plant, we have succeeded in limiting certain unfavorable affects of a production process that generates various waste products. For instance, 20 years ago the level of emissions which we produced over Ostrava was almost critical; they amounted to 75,000 tons of solid particles. Today we emit into the environment 16,000 tons; similarly we have been successful in reducing by a number of times the level of pollution of the Ostravice river.

It is often difficult to estimate the costs which must be expended to protect nature. Many times it is even more difficult to generate an active interest among people in ecological problems. This is shown by the example which comrade Beska mentioned previously; there are people who have no qualms about shutting off ash separators at night without regard for the health of their fellow citizens. We are seriously concerned with the problems that we are discussing here because our enterprise lies almost in the heart of a city.

I agree with the view that it is extremely necessary to win over as wide a spectrum of citizens as possible to the cause of the protection and management of the environment. Voluntary initiative on the part of people often leads to surprisingly good results.

At our operation, for instance, there was a smoldering dump of ash and slag; it took up a space of 80 hectares. The smoke which it emitted continually contaminated an entire apartment complex in the Hrabuvka quarter of Ostrava. We established a problem solving team of technicians, researchers and workers, put our heads together and worked out a technique, the implementation of which brought success--we managed to extinguish successfully the dump. This was not accomplished for free; our enterprise had to invest several tens of millions of korunas in this project. And we of course had to win over our economists for an investment of this magnitude. We also prepared studies in which we assume that in the future a part of this former dump will be donated for the use of the apartment complex. Today, you see, it looks like a hill which will begin to sprout plants during the spring and summer. Why not, then,

utilize it as well in part for the construction of playgrounds for children, tennis courts, or a football stadium?

It is often asserted that the start up of a new production technology is also helpful to nature. One of the greatest sources of pollution in the Ostrava area was, for instance, our obsolete blast furnace, which Ostrava residents knew by the name of "Zofinka." This furnace belched solid and gaseous emissions right into the center of the city; tons of ash fell on the theater and other buildings, into the streets, on people. When we shut down the Zofinka furnace, we calculated that the newly constructed automated furnace would save, in comparison with the obsolete furnace, several hundred people, hundreds of thousands of tons of coke, while the amount of emissions would decline by 20,000 to 25,000 tons annually.

Similar results should come from the introduction of a new steel-making technology, oxyvit, which we are developing successfully at Vitkovice. If this new heating technique proves itself here, we will not only be able to save 140,000 tons of standard fuel annually, but at the time time also improve the environment significantly, so that no one will be aware, at a distance of about 300 meters, that not far away a melt is taking place at an oxygen steel mill. These are, I think, sufficient proof that under certain conditions it is possible to unite economic and ecological requirements.

[Kubaneck] Concern for the environment is becoming a world wide problem. At times, however, we evaluate it in an unduly pessimistic fashion. The opposite is indicated by the above mentioned positive results which have been achieved at the Vitkovice Klement Gottwald Ironworks. It is impossible, however, to hide the fact that we have not been successful in this area in successfully resolving many problems, and that we must make much greater use of the findings of science and technology, so that in the protection and management of the environment we may achieve better results. It is a matter of finding optimal techniques for the utilization of natural wealth for the national economy, while at the same time preserving as much as possible the health of the people and the natural equilibrium which surrounds it.

When one returns to the documents of the Fourteenth, Fifteenth and Sixteenth CPCZ Congresses, one realizes the ever more pressing need for the more conscious management and protection of the environment. This is of the nature of a fundamental requirement. To be sure, much in our life has changed. Farmers have become mass producers of plant and animal crops, we have expanded the mining and the utilization of lower quality coal, the chemical industry has expanded, etc. The consequences of these changes, however, have not been coped with by a number of managerial employees in industry and agriculture, who often do not fully realize the damage caused by the operations of their organization. The result, then, are the tolerated manifestations of antisocial activity which we have already criticized: the shutting off of ash separators at night, the discharge of pollutants into rivers, putting investment in water treatment facilities last on the list of priorities in the plans of many enterprises, etc. A more detailed analysis often indicates that the coordinating activity of the managerial organs at all levels, which could have a positive impact on the environment, has not reached the level

of quality characteristic, for instance, of the Soviet Union, where for instance the relevant central managerial organs have respected the suggestions and warnings of ecologists and forbidden the construction of a cellulose factory near Lake Baikal, as well as other factories which could exert a negative influence on the ecological balance of certain natural areas.

Occasionally fears are expressed which are not based on any scientifically proven facts but on half truths which stem from the improper popularization of science in the mass media. Often we truly do not have at our disposal sufficient information to determine for sure the utility or harmfulness of certain compounds for humans. This has been especially true in recent years, when the chemical industry has been producing an ever greater number of organic compounds, the effects of which on living organisms we are not capable of evaluating in a timely manner.

Above all, we do not have at our disposal enough data concerning the long term effects of a number of chemical compounds on living organisms or on entire ecological systems. The most complete set of findings possible in this area, however, may be obtained only through systematic, long term research within the framework of international cooperation, for we alone do not have sufficient resources for this task.

Measurement technology is improving, meaning that scientists are now discovering, for instance, materials in foodstuffs which we would not have been capable of recording earlier, though it is probable that our predecessors consumed these materials as well. Research is confirming the correctness of the view that phenols and certain other organic compounds may cause, in certain concentrations, serious illnesses and even genetic changes if they make their way into the food chain.

[Kupka] I want to call your attention to one of the most serious problems caused by a purely economic approach to the management and protection of the environment. I will illustrate this with a single concrete example from our concern enterprise. We built some apparatus for the recirculation of water, by means of which we were able to reduce the consumption of service water by several million tons annually. We could, however, by means of additional investment, have reduced its consumption and discharge into the river from the current 24 million tons to only 12 million. But the resources for this project have already not received approval. Why? Because, you see, no one at our facility is able to calculate precisely the value of the savings to be realized; water is for the time being too inexpensive and the investment which we requested would have a payback period of about 30 years given the current level of valuations.... In this case, then, the ecological viewpoint, which calls our attention to the pressing nature of the need to conserve water, is not the deciding factor.

[Nutil] Analyses indicate that the savings which come as well from separator and scrubbing stations, in the final analysis, do not pay for themselves; the damages which result from the pollution of the air and water are so immense over time that in order to correct them we must commit amounts that are many times higher than the savings which we realize.

Water consumption in our country is increasing rapidly; at the same time water sources are not inexhaustible. If, for instance, water consumption was to increase as rapidly as in recent years, by 1992 we would not have even a drop to spare. Then we would be in a position of valuing it on a par with gold. The production of potable water from rivers would be extremely expensive for us--about 6 korunas per liter. By this time, no amount of revaluation of water would do anyone any good. This most essential of natural chemical compounds would have to be chalked up to irreplaceable losses.

Similarly, we are pursuing a risky policy regarding land, which also belongs among the irreplaceable resources of human life; without soil, clearly, we cannot produce bread or feed for domestic animals. We often fertilize soil excessively, and when it does not absorb all of the chemical compounds, the pollution of streams results. The cost of this kind of wastage may be calculated only imprecisely. I think, however, that it is sufficient to note that we expend the same amount of energy on the production of a single ton of nitrogen fertilizers as for the production of the same mass of pig iron.

I agree with comrade Kupka that the economic consequences of the unfavorable impact of human activities in nature often cannot be expressed numerically, which is to the detriment of society as a whole. In this area, you see, it is essential to plan for the long term; the overfertilization of soil, for instance, may destroy the humus layer of a piece of land, so that yields after a few years will begin to decline, despite additional human effort.

[Hron] The problem of ecological balance in a region is a quite complicated matter of concern to the entire society, a fact which stems unambiguously from the conclusions of the Sixteenth CPCZ Congress and the program announcement of the CSR government. In the preceding discussion attention has been directed to the very serious problems threatening the environment, especially from the viewpoint of the mass production activities of various branches, and also particularly as a consequence of large scale agricultural production. These are very complex situations which may not be resolved in any more detail here. As an agriculturalist and a volunteer preserver of nature, I would like to add two examples as a comment on comrade Nutil's remarks concerning our risky soil policy.

The creation of gigantic agricultural complexes has an undoubtedly great positive significance for the utilization of the advantages of modern mass production technology in plant and animal production (especially in the areas of mechanization and chemicalization); labor is conserved, organization and administration is made easier. In numerous instances, however, it has turned out that the ecological consequences of this type of mass production, under our specific production and natural conditions (significant territorial variations, soil types, etc.), have not always been taken into account to the requisite degree. For instance, in blocking out fields we have created great, connected units of arable land both on level ground and on slopes. We have stripped enormous territories so that nothing would obstruct the work of modern heavy agricultural machinery. This has meant, however, among other things the removal of existing boundaries, dams, ditches, and thickets which had been consciously built up over several centuries as effective barriers

reducing excessive surface water drainage, which can lead to the great danger of water erosion, with all of its negative consequences of reduced soil fertility, flooding, water pollution, the silting up of reservoirs, streams and the like. The above situation, also contributes to increased wind erosion, and thereby to unpleasant amounts of dust in the air.

As an additional example connected to soil fertility, I want to mention the current situation with respect to the utilization of state farm fertilizers. It is happening that certain fields are being fertilized primarily with mineral industrial fertilizers. The long range use of these fertilizers leads to the results mentioned by comrade Nutil; the humus is lost, yields begin to decline because the arable soil is changing into dead earth. During the winter months the excess manure is often taken away as waste to a quarry or to remote locations. Mention is even made of "manure liquidation"; and this is very serious for us for well known and unpleasant reasons.

[Kubanek] Even our scientific base is fully engaged in solving the problems of the management and protection of the environment. The CSAV presidium has included 18 target projects among the priority tasks in basic research for the Seventh Five Year Plan. These projects are to accord priority to finding ways to increase the contribution of Czechoslovak science to the solutions of the most important development problems in the national economy. Among these projects there are 2 which are directly concerned with providing for care for the environment. The target project entitled Ecological Optimalization of Oblast Management as a Basis for Expanding Findings Concerning the Ecological Aspects of Regional Management is a base for expanding our knowledge of the ecological aspects of oblast management in oblasts with a high level of antropic influences: it will establish, primarily, limits to the possible loading of a region with human activities, and propose ecological management systems for selected oblasts. The target project entitled Ecological Optimalization of the Utilization of the East Slovakian Lowlands is focused on assuring an ecological evaluation of existing human interventions in an agricultural region and on establishing principles for the gradual ecological optimalization of a multifunctional utilization of the East Slovakian lowlands.

Likewise, the remaining target projects one way or another relate indirectly to the solving of environmental problems. It is possible to mention as an example the target project entitled The Extraction of Inorganic Raw Materials Under Critical Conditions, Their Preparation and the Thermochemical Processing of Bituminous Coal, which creates the scientific foundations for the extraction of coal and, perhaps, other inorganic raw materials from critical depths of both underground and open pit mines, for the preparation of brown coal with a high ash content, and for the optimalization of the coking of domestic bituminous coal. Another example is the target project entitled The Comprehensive Utilization of Lignocellulose Raw Materials--Phytomasses: in this project the foundations will be formulated for nontraditional techniques in the chemical, biochemical, and physico-chemical processing of renewable biomass, which will be utilized in the chemical, cellulose, paper and wood industries.

There are two scientific workplaces in the CSAV which are concerned directly with ecology; the CSAV Institute for the Ecology of Industrial Regions in Pruhonice, and the newly formed CSAV Institute for the Ecology of Industrial

Regions in Ostrava. In addition, most of the CSAV institutes in the fields of natural and technical sciences concern themselves with the solution of various ecology related problems. As an example, it is possible to mention the development and utilization of so-called pheromones, compounds which make possible the preservation of crops in a modern fashion.

Under the CSAV presidium works the CSAV Commission for Environmental Issues, which develops specific projects. It prepares various background and position papers which the CSAV presents to state organs; it evaluates concepts for ecological research at CSAV worksites, for the popularization of activities, and the like. Recently, for instance, it has been concerning itself with the condition of management in threatened oblasts and the resolution of the problem of preserving our forests, because the penetration of emissions into plant stands, which in the past 30 years has increased rapidly in industrially advanced countries, has in the CSSR alone damaged in a visible manner more than 400,000 hectares of forest already. It is a matter above all of the influence of acid rainfall which threatens forests even away from industrial areas and significantly reduces their resistance to meteorological and other influences.

For the future we must assume that industrial emissions will continue to increase. This will necessarily become evident in a further worsening in the condition of forest stands. Clearly, however, still more serious is the threat to the nonproductive functions of the forest, above all its hydrological, soil stabilization, and recreational functions. Changes in the hydrological water management relationships in the affected areas will certainly have serious consequences.

Czechoslovak science must still more emphatically call attention to these complex problems, but it also must more actively search for their solution. This is a matter of tasks of extensive social impact, the solution to which must be approached with the greatest sense of responsibility and in cooperation with all interested institutions.

[Krumphanzl] The word waste will in the course of time lose its meaning. Already today we are having to reorient ourselves to be on the lookout for potential secondary raw materials in any kind of matter or energy which remains after the completion of any technical procedure. It is, for instance, well known what kind of pollution is caused in rivers by sulphite waste liquors which are a byproduct of the paper making process. At the same time, these liquors contain valuable compounds from which it is possible to produce, for instance, yeast protein, which may be utilized as a feed for livestock; it has likewise been shown that yeasts are a valuable source of certain essential compounds for humans as well. I have mentioned this example to suggest the implications of a wasteless technology for the national economy.

As time passes, and man gains increasingly in-depth knowledge concerning the world around him, another phenomenon appears; new possibilities suggest themselves to us for recovering certain raw materials. It has been shown, for instance that it is economical to recover certain metals, the prices of which have risen on world markets, from old dumps or from abandoned deposits. We

will, for instance, again be mining gold from dumps which are to this day located in the places where this precious metal was mined during the reign of Charles IV. On many occasions it is worth considering whether certain wastes which we are not yet capable of processing should be stored until such time as the requisite technology appears, either here or elsewhere in the world. The greatest problems for us so far are with the storage of ash....

[Beska] The storage of ash is really causing great difficulties for us. It is sufficient for a breeze to blow in dry weather, and a dark cloud of dust rises from the storage piles. However, as it has already been stated, nor are other storage schemes very satisfactory either. In our okres it is possible to pile up the ash at a location where open pit mining has ceased. This is not, however, the end of the problem at hand, because a real danger exists of spontaneous combustion. Moreover, on more than one occasion we discard valuable raw materials, many times only because we were unable to organize their repurchase. National committees alone will not solve this problem, just as we cannot provide a solution based on fines alone to the problem polluters of nature. Managerial employees must play an expanded role here, in conjunction however with union organizations at enterprises and factories. I likewise welcome the efforts of the members of the Union of the Preservers of Nature in exerting direct influence on production personnel so that they become aware of the consequences of their actions.

[Kupka] There could also be a substantial improvement in both the servicing and production of separator equipment, including the production of measurement instruments which are technically capable of registering the volume of emissions. Otherwise we could find ourselves in a paradoxical situation in which an enterprise which was polluting the air would not have the possibility to find out in time the consequences of its activity....

[Sramek] A number of problems would not have to arise if, for instance, the designers of new production units would think about the need to build scrubbing facilities. Many of them point to the fact that this is in no way an inexpensive matter, but at times it is preferable to save on the construction and outfitting of a building rather than on separators.

Other difficulties are caused by a lack of seriousness on the part of certain enterprises in the fulfillment of planned tasks; in the Sixth Five Year Plan we were unable to build a number of waste water treatment facilities in the North Bohemian Kraj because the Sigma concern enterprise did not deliver the requisite equipment for them, the production of which had been properly allowed for in its plan. In this five year plan we should not tolerate anything of the kind.

To assure a concern for the environment in oblasts where the level of damage to nature is the greatest, a program has been formulated for a gradual resolution of the management and protection of the environment which will be fulfilled during the Seventh Five Year Plan. The results of this program will probably be in force for the Eighth Five Year Plan. Its realization depends, among other things, on a further increase in the level of awareness of the

environmental problem in the affected oblasts. The basics of territorial planning, territorial predictions, and actual plans will then be generated at the oblast level.

As far as the North Bohemian Kraj is concerned, no further energy sources will be constructed here, with enriched fuel to be used to a greater extent for localized heating purposes. We are beginning the construction of experimental desulphurization equipment for smokestack gases at one 200 megawatt unit of the Tusimice II power plant, and we will construct desulphurization equipment for expansion gases, including the liquidation of penetrating odors, at the Antonin Zapotocky Fuel Combine in Usti nad Labem. Similarly, we will proceed with the desulphurization of generator gases at the Chomutov Pipe and Iron Rolling Mill. The priority coverage of deliveries and spare parts for the construction of ash separators in the North Bohemian Brown Coal Region is becoming a key nationwide priority for our machinery production capacity.

Among the additional significant measures which we are preparing with the objective of improving the situation in the North Bohemian Kraj is the reforestation, during the current five year plan, of 30,000 hectares of land with resistant tree species, and the recultivation of other regions and their return to agricultural uses. It is a matter of the more rapid construction of heretofore obsolete amenities for the population, as well as technical facilities, the construction of new apartments, retirement homes, and homes for concentrated husbandry services.

A basic improvement in the environment of the capital city of Prague likewise remains a complicated problem, the solution to which will require an extended period of time. It is a matter, primarily, of the quality of waste water treatment, of the processing and disposal of city wastes, and of the elimination of shortcomings in the transportation sector. A secondary level of dust is caused by the transportation of building materials and by excavations essential to the extensive construction going on in the center of the city. Together, these factors cause a situation, along with the emissions from local heating plants, in which certain sectors of Prague, under specific meteorological conditions, have an excessive level of air pollution.

A long term project, which should lead to an improvement in air quality, is the construction of the Melnik-Prague heat pipeline, which will represent the foundation of an expanded heating system based on centralized heat sources. The program for environmental management and protection in Prague includes the continuing refitting of building and block coal-fired boilers so as to make it possible to install burners for enriched fuels. The expansion of greenbelt areas is also to be a significant contribution to the solution of the environmental problems of the capital city; we are projecting that during the Seventh Five Year Plan 250 hectares of parks and apartment complex landscaping and 70 hectares of recreational woods will be provided within the limits of the capital city.

The enumeration of the above tasks confirms the complexity of the problems which we must solve in order to preserve an acceptable environment. Recent

years have taught us more than once just how complex and terribly difficult these tasks are, and the extent to which every scientist, technician, worker, engineer, functionary, tractor operator or other citizen must contribute to their resolution. It is just this kind of comprehensive approach to the problems of environmental management and protection that pay off, however. Let us not, then begrudge the efforts necessary to implement such solutions. Let us not forget that environmental quality is an inseparable attribute, and one of the most treasured values of the developed socialist society which we are building gradually in our country. Let us demonstrate this awareness, in all aspects of contemporary life, not only by words, but above all by concrete actions.

9276

CSO: 5000/3013

ETHIOPIA

BRIEFS

ILLUBABOR AFFORESTATION--Mettu (ENA)--Preparations are nearing completion to launch a massive afforestation campaign in Illubabor region as part of the nationwide endeavour to protect and develop wildlife and natural resources. The regional branch of the Forestry and Wildlife Conservation Authority intends to plant some two million tree seedlings on denuded areas in Illubabor and that one-third of this is ready for planting. The regional branch of the Authority has also constructed a five-km road and repaired another 15 kms. Stretching to thick forests in the region in order to supervise the condition of wildlife. Due attention and care are being given to young trees planted on self-initiated campaigns in various parts of the region. Training opportunities have also been given to 1,000 peasants on soil and forest conservations, nursery and other skills. The peasants in turn are to coordinate their communities and initiate small scale afforestation campaigns within their localities. [Text] [Addis Ababa THE ETHIOPIAN HERALD in English 22 Apr 82 p 3]

CSO: 5000/5736

HALTING DESERT ENCROACHMENT PROPOSED

Johannesburg THE CITIZEN in English 4 May 82 p 4

[From the "Parliament" page]

[Text]

DESERT encroachment could be reversed in South Africa's agricultural areas once the irrigation lands along the Orange River were harnessed for feed production, Mr Eli Louw (NP, Namaqualand) said.

Speaking during the committee stage of the Agriculture and Fisheries Vote, he said a recent report had shown that 55-million ha of South Africa's 85-million ha of farmland was threatened by desert and Karoo encroachment.

Five-million ha, all of it in Namaqualand, had already been turned into total desert.

The report had shown that the spread of the Karoo and desert conditions threatened mainly the Cape West Coast,

Karoo and north-western Free State as well as areas of the Transkei and Lesotho.

Te five-million ha lost in Namaqualand was not a regional problem, he said.

"The disaster that has hit Namaqualand will hit the rest of the Republic, only later."

The report had shown that the cause had not been a drop in rainfall or any change in weather patterns, but over utilisation.

"More and better vegetation existed in these areas in the past," he said.

There were massive stretches of irrigation land along the Orange River below the Hendrik Verwoerd Dam that were not utilised and he

believed this could be used for cheap livestock feed production.

"The water of the Orange River must be made to flow to these dry areas — not in pipes but in feed."

The Government should ensure that nothing else but feed be produced on the river banks and that this feed be made available to farmers at minimum cost.

Livestock withdrawal, even during times when the veld was good and wet, would become a pattern of South African farming.

This was the way to reverse the encroachment of desert and Karoo conditions, Mr Louw said.

CSO: 5000/5739

CONCERN INCREASES OVER PURITY OF DRINKING WATER

Helsinki UUSI SUOMI in Finnish 29 Mar 82 p 28

[Article: "No Standards For Use of Chemicals in Waterworks"]

[Text] Water is essential for all of us, and has been since the beginning of time. But we continue to be very indifferent to the kind of water we use and the sources from which we obtain our water. The laws, statutes, and regulations concerning these issues are filled with gaps and serious deficiencies.

However, the future portends better: Research is being directed more intensively toward the chemicals used in waterworks and their uniform standardization as well as the inspection of water pipes. This was promised by the Central Medical Board, which is the administrative guardian over our health.

A significant improvement in the operational conditions of the National Health Institute from the point of view of environmental medicine occurred when an environmental hygiene and toxicology section was established in Kuopio in the beginning of March. The major emphasis of its research will be on water and the use of water.

Section Chief Kimmo Leppö of the Central Medical Board emphasizes that issues concerning water are being forcefully brought up all over the world. The use of chemicals in water, in particular, has been insufficiently studied. Here and abroad.

Three Important Points

In the opinion of the Central Medical Board clarifications and evaluations should be made of such health risks which are possibly caused by trihalomethane appearing as an impurity in drinking water, the chemicals used in waterworks, or harmful substances coming from the materials used in water pipes.

Engineer Leena Hiisvirta of the Central Medical Board states that trihalomethane develops from the organic substance contained in natural waters in combination with chlorination. The effects of trihalomethane which belongs to the chloroform-related compounds, have not been sufficiently studied.

Another important area of research, the chemicals used in waterworks, is considerable extensive. "There are not even any uniform standards for the use of chemicals," points out Hiisvirta. Standards are now being compiled. At the same time a clarification must be made with respect to the connection in which chemicals are approved for use and the kind of quality requirements that should be established for them.

As an indication of the diversity of opinions concerning the use of chemicals in waterworks Hiisvirta mentions that fluoridation is being accomplished only in Kuopio in our country and even there fluoridation has its supporters as well as its opponents.

Regulations concerning the material properties of water pipes are also rather deficient. According to Hiisvirta the only stipulation in force is that of the Interior Ministry requiring that no substance which may cause changes in the quality of water or cause detrimental effects to human health can be used if it is capable of dissolving into the water system from the pipes.

Detailed Regulations Lacking

"More detailed regulations do not exist. For example, there are no regulations regarding the types of materials used in pipes," emphasizes Hiisvirta.

She points out that the question of materials is vital. Recently, in the United States incidents of poisoning were caused by lead that had dissolved from the water pipes into the water system. In Finland lead cannot be used in water pipes.

"But we are lacking any guidelines concerning the quality of materials used in plastic water pipes and also concerning the galvanization of iron pipes. Galvanization usually consists of a zinc coating. Zinc does dissolve into the water in rather large amounts, but not, however, to a dangerous degree. Zinc in itself is even an unavoidable trace element, but large amounts are, of course, harmful."

Engineer Hiisvirta complains that all such studies require large amounts of money. Funds are insufficient just as is the manpower for research.

10576

CSO: 5000/2091

METEOROLOGIST DISCUSSES AIR POLLUTION OVER FINLAND

Helsinki HELSINGIN SANOMAT in Finnish 29 Mar 82

[Article by Goran Nordlund: "Atmosphere May Contain Unknown Harmful Pollutants"]

[Text] The author works as a meteorologist and researcher in the Institute of Meteorology. He recently defended a doctoral thesis concerning the spread of air pollution and the appearance of sulphur as an air pollutant in Finland.

Sulphur compounds are the most well-known and also the most detrimental air pollutants. The majority of sulphur in the atmosphere, if we think about the whole world, is of natural origin. In industrialized areas, which includes Finland, the additional amount of sulphur produced by people is so significant that sulphur contents are many times that of the natural amounts. Therefore, it is completely correct to talk about sulphur as an air pollutant caused by people, especially when sulphur is detrimental as implied in the word contamination.

Much research has been conducted on the presence of sulphur primarily as a gaseous sulphur dioxide. Presently in Finland the origins of airborne sulphur are already quite well known. This information is, for the most part, based on international research. Considerable research has also been conducted in various research institutes in Finland also.

The results of this research indicate that generally the majority, approximately 80 percent of the sulphur in the air, originates in foreign countries and its sphere of influence extends beyond the immediate area of densely clustered and individually large industrial plants emitting sulphur.

However, this large percentage figure is misleading. From the same research studies it can be confirmed that sulphur emissions in Finland correspond to approximately two-thirds of that total amount which descends on Finnish territory. The apparent conflict between the amounts is explained by the fact that a large portion of the sulphur emitted on Finnish territory travels with the winds to neighboring countries.

Content Levels

Sulphur dioxide coming from foreign countries to Southern Finland adds to the existing concentration of sulphur, which amounts to an average annual

level of 5--10 micrograms of sulphur dioxide per cubic meter of air. In the northern part of the country the corresponding addition is approximately 2 micrograms per cubic meter. These levels are still rather low compared to the average annual levels of 20--40 micrograms appearing in medium-size cities in Finland. In Helsinki the average level is 40--60 micrograms per cubic meter. (A study made by the cooperative commission of the capital city area).

In isolated instances the amount of sulphur coming from foreign countries can rise to 50 micrograms in Southern Finland and to several tens of micrograms even in the north. In the most polluted areas of Europe the concentrations of sulphur dioxide are on the average three-fold that of the concentrations in Southern Finland.

Another important sulphur compound which appears as an air pollutant is sulphate. Sulphate is primarily generated from sulphur dioxide through a transmutation, at which time its amount increases in proportion to the distance it is from the original source. However, sulphate concentrations are still much smaller than sulphur dioxide concentrations in Finland.

A third significant sulphur pollutant, hydrogen sulphide, is for its part primarily from natural origins except for origins in the vicinity of individual industrial plants and the territorial fluctuations of its concentrations are small.

From Where Sulphur Comes

A research study entitled "Long Range Transport of Air Pollutants", dealing with air pollutants and funded by the OECD, indicates that large amounts of sulphur travel to Southern Scandinavia, particularly to Southern Norway and Sweden, from England and Central Europe, for example, the Ruhr area. There these pollutants have increased the acidity of lake water, among other things. The situation in Southern Scandinavia has been reviewed in the Finnish press since information concerning Sweden and Norway would also be valid here. However, from the point of view air pollution Finland is in a much different position than its western neighbors.

Because of meteorological reasons, Finland rarely experiences situations in which high concentrations of sulphur originate from the western portions of Europe. Winds from the south and the southeast are capable of bringing significant amounts of pollutants to Finland when the source areas are located somewhat more to the east.

Little Information

Naturally, the individual researching the areas from which air pollutants originate cannot inject views concerning guilt into this question. From the point of view environmental protection it is not, however, immaterial from where the pollutants come since the area of origin determines their composition, among other things.

Less is known about other air pollutants than is known about sulphur. There is little information about such substances which have only recently attracted

attention. It is very probable that there are air pollutants about whose existence there is still insufficient information.

Organic compounds make up one large group of air pollutants about which very little is known. Another group is made up of heavy metals. Poorly studied or even completely unknown groups of air pollutants can indeed produce dangerous substances in the future.

An important task of environmental protection is to simulate new air pollutants that have turned out to be harmful and to prevent their emission into the atmosphere. It is very probable that such new air pollutants will first be carried to Finland by the winds from foreign countries.

Radioactivity

Radioactive nuclides, which are emitted into the atmosphere from nuclear power plants in very small amounts, make up an exceptional group of air pollutants. There is reason to mention them in connection with environmental protection since in the production of energy a choice must frequently be made between power plants using fossil fuels and nuclear power plants.

Many radioactive substances remain in the atmosphere for a long time and travel over great distances with the air currents. In Finland the proportion of radioactive nuclides coming from foreign countries seems to be large in comparison with emissions from domestic sources. We have recently begun to direct our attention to this matter.

The possibilities of clarifying the effects of radioactive air pollutants coming from foreign countries are presently being studied in the Institute of Meteorology and in the Nuclear Power Engineering Laboratory of the State Technical Research Center.

Significance Fluctuates

In light of present knowledge it is difficult to give an unambiguous answer to the question concerning the significance of foreign pollutants in the protection of the environment in Finland. The significance of various pollutants is quite different depending on how long they have remained in the air, on whether the emissions came from tall smoke stacks or from near the surface of the earth, and so on.

However, some conclusions can be drawn from sulphur as an air pollutant. Even though the amount of sulphur coming from foreign countries is clearly greater than domestic emissions when taking all of Finland into consideration, the level of concentration in densely populated areas, for example, is without exception so high that local air protection measures are very decisive.

There is no reason to even attempt to enumerate those groups of other pollutants whose foreign origin is significant and those whose emission is completely controllable by domestic measures. Of the latter group one can, of course, mention air pollutants originating from motor vehicle traffic. It is difficult to imagine that their foreign origin would be significant in any way.

10576

CSO: 5000/2091

GREECE

BRIEFS

DEADLY POLLUTION RESULTS--On Tuesday the Athens "cloud" was present and hovered between the highest acceptable limits and emergency levels. Between Mar. 29 and April 13. A statistical study showed that on the days when the "cloud" was present at high levels the death rate rose by 150%. [Text] [Athens ATHENS NEWS in English 15 Apr 82 p 4]

CSO: 5000/5325

ENVIRONMENT MOVEMENT STRONG FACTOR IN ENERGY PLANS

Oslo ARBEIDERBLADET in Norwegian 13 Feb 82 p 10

[Commentary by Pal Nordenborg: "Environmentalism-The Quiet Revolution"]

[Text] Since the war, energy and environment questions have been some of the most controversial political issues. Growth, on one hand, and environmentalism on the other appeared to be incompatible interests. Included in this picture was also the description of the environmentalists suffering defeats from the "power socialists" in the Labor Party.

Some time ago, Rolf Hansen summed up his impressions from his team of office as Minister of Environment. In spite of Alta and in spite of hard struggles over other [projects to dam] watercourses, he pointed to the quiet environment revolution. Many people still perceive the protection of the environment as a typical battleground, as a cause that has to be fought with drastic actions. He did not in any way underestimate the potential of such environmentalist actions. But he also called attention to the fact that it was easy to overlook the determined work quietly, taken place. In his opinion, the breakthrough for a new consciousness regarding environment is to be found in the solutions to concrete problems. Protection of the environment is the responsibility of society as a whole, and that requires cooperation, Rolf Hansen emphasized.

The Quiet Revolution

The Willoch government emphasizes that it has by no means decided to prolong indefinitely the Gaula [dam] project. The expansion plans for the Gaula watercourse have just been postponed. And the Prime Minister has reserved judgement with respect to decisions regarding other watercourses. But the calm following the present case and the reactions it engendered is evidence that Rolf Hansen knew what he was talking about. A revolution of the type referred to by Rolf Hansen is a precondition for the confidence and security of the government in introducing at this time a proposal which does not entirely please either the environmentalists or the "energy expansionists."

The breakthrough for the environmentalist idea, which he predicted would happen through cooperation and solutions from case to case, has become a reality. The result is that environmental concerns today are given equal weight when energy policies are planned.

Overall Plan

Gro Harlem Brundtland, the chairman of the Labor Party, seems to be justified in claiming that the demand for an overall program for the planning of the remaining watercourses had not just become the platform of the Labor Party after a thorough discussion following the "Veig-Dagali" national convention in 1977-it had also become the common, self-evident foundation for any further discussion of energy and environment issues in the future in this country.

The discussion will surely flare up again just as strongly when the total plan is set forth sometime in 1985. But in the meantime, this quiet revolution will have advanced further, step by step.

9892

CSO: 5000/2075

COMMITTEE FINDS IMPROVEMENT IN HAZARDOUS-WASTE HANDLING

Stockholm DAGENS NYHETER in Swedish 10 Apr 82 p 6

[Text] The facilities for handling hazardous waste in Sweden have improved recently.

SAKAB, Swedish Nuclear Waste Processing, Inc., has improved its receiving and temporary storage stations for such waste, the Riksdag agriculture committee points out in a report on 11 motions on environmental questions.

According to the committee, SAKAB has informed the municipalities that the firm can now handle environmentally hazardous waste from municipalities that have introduced expanded garbage and trash monopolies.

"The committee finds it appropriate in its opinion for the municipalities that have not yet introduced expanded monopolies in regard to environmentally dangerous waste to make use of this possibility of solving the problem," says the committee.

In connection with a Social Democratic motion that the main office of SAKAB should be located in Kumla, the committee states unanimously that it is natural for the main office of a company being organized to be located near the central installation. In SAKAB's case it is located at Norrtorp, near Kumla.

The committee also discusses a motion by Sven Munke (M [Moderate Coalition Party]) to the effect that SAKAB should announce publicly where the hazardous waste from BT Kemi in Teckomatorp is being taken.

"The masses of earth containing poisonous substances that were in the area have been taken out of the country to be finally taken care of by a French processing company," says the committee.

As far as possible, open information should be the policy in such questions. The investigation into the matter does not, however, give cause for any special pronouncement of the Riksdag, in the view of the agriculture committee.

The Social Democrats on the committee are not satisfied with the committee's reasoning on temporary storage of hazardous waste. They say in a reservation that the government must see to it that SAKAB gets facilities for temporary storage of hazardous waste in suitable places.

It has often been very difficult for SAKAB to get the municipal permits that are required. According to the Social Democrats the government should enter into discussions with the municipalities to work out a location plan.

The report will be discussed in the Riksdag after Easter.

8815

CSO: 5000/2104

BRIEFS

FORESTRY CHEMICAL SUBSTANCES BANNED--The use of chemical pesticides in forestry is banned as of 1 January 1983 under a Riksdag decision made Wednesday. The current temporary ban on the use of chemicals to combat caterpillars is extended to the first of the year. However, the new law does provide possibilities of dispensation from the prohibition. If the forest area is of little importance to outdoor life, nature conservation, and the welfare of the local population, a dispensation can be granted. Dispensations can also be granted if caterpillar control is necessary to meet the requirement of the silviculture act concerning regrowth and if the circumstances are such that mechanical clearing cannot be done. Finally, dispensations can be granted if caterpillar control cannot otherwise be done in an economically justifiable way. Account shall be taken of the forest industry's varying profitability in different parts of the country. The Environmental League insists that the Riksdag has betrayed the interests of environmental protection. The law gives the appearance of meeting the demands of the environmental movement, but the possibilities of dispensations are far too generous, the league says. [Text] [Stockholm DAGENS NYHETER in Swedish 16 Apr 82 p 6] 8815

LAKE ACIDIFICATION REPORTED--Are you tempted to try your fishing luck in the clear water of the Skogssjö? Then you may be cruelly disappointed. Clear water can be a sign that the lake is strongly acidified and the fish dead. An investigation done by the Stockholm county government of 13 lakes shows that 9 of them must already be classed as definitely acidified and the other 4 as threatened with acidification, TT [Tidningarnas Telegrambyrå] reports. The lakes that have been checked for 5 years are the Acksjö, the little Mörtsjö, the big Alsjö, the little Alsjö, and the Hundsjö in the Södertälje tract, the Tornbergssjö in the vicinity of Tungalsta, the Southern Krokträsk and the Northern Krokträsk in Orminge, and the Hampträsk, the Svartträsk, and the Korsmosjö on Värmdö, and the Svartträsk and the Långviksträsk on Ingarö. The lowest pH values were found in the Tornbergssjö. The values varied between 4 and 5. At such low values it will not be long before all the fish in the lake die out. The study shows clearly that even in Stockholm county there are lakes that are definitely acidified and more that can be considered as very sensitive, since the pH values sometimes drop sharply. This has to do primarily with snow melting and after heavy rains. Of the lakes in the Södertälje tract only the Acksjö and the Little Mörtsjö can be considered as not yet entirely acidified. [Text] [Stockholm SVENSKA DAGBLADET in Swedish 10 Apr 82 p 11] 8815

CSO: 5000/2104

END